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I, JULIE BILLINGSLEY, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. PS 1478 for a patent by BAKENOMICS PTY LTD as filed on 02 April 2002.



WITNESS my hand this  
Eighth day of July 2003

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## **PROVISIONAL SPECIFICATION**

**Invention Title: "A METHOD OF SCHEDULING A  
PRODUCTION RUN OF BAKERY PRODUCTS"**

The invention is described in the following statement:

## TITLE

### A METHOD OF SCHEDULING A PRODUCTION RUN OF BAKERY PRODUCTS

#### FIELD OF THE INVENTION

5                   This invention relates to a method of scheduling a production  
run of bakery products. Specifically, this invention relates to a method of  
scheduling a production run of bread products and therefore will be  
described in this context. However, it should be appreciated that other  
bakery products such as biscuits, cakes and/or buns or the like may be  
10                   produced using the method.

#### BACKGROUND OF THE INVENTION

                  Consumers today demand a large variety of bakery products.  
For example it is not unusual for a bakery to produce rolls, loaves and/or  
buns of varying weights and shapes from white dough, wholemeal dough,  
15                   oat bran dough, soy linseed dough and fruit dough. When a combination of  
these bakery products are produced it is not unusual for over one hundred  
bakery products to be produced in a single production run.

                  Supermarkets often require different production runs compared  
to small boutique bakeries. For example, supermarkets normally want their  
20                   shelves full of bread at opening and run only smaller production runs during  
the day. Boutique bakeries may only bake their products in a single  
production run or bake their products continuously through the day.

                  It is usual that demand for bakery products varies throughout a

single week. For example, weekend demand is normally higher than weekday demand. More exotic bakery products are also required on weekends.

5 It requires great skill and expertise to schedule a production run to produce all of the desired bakery products by a specified time. The major difficulty with producing a large variety of bakery products is there is often a large wastage of dough. It is not unusual for bakeries to waste up to 20 percent of dough from each batch. Further, once a production run has been planned it is difficult to change a production run mid stream.

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#### OBJECT OF THE INVENTION

It is an object of the invention to overcome or alleviate one or more of the aforementioned disadvantages and/or provide the consumer with a useful or commercial choice.

#### SUMMARY OF THE INVENTION

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In one form, although not necessarily the only or broadest form, the invention resides in a method for scheduling a production run of bakery products including the steps of:

20

determining bakery products to be produced including a dough type, a weight of dough of each said bakery product and a number of said bakery products to be produced;

organising each bakery product into a group according to the dough type;

calculating a total weight of dough of each bakery product to be

produced;

calculating a number of full batches that can be produced of each bakery product;

5 calculating a weight of dough for each bakery product that cannot be produced in a full batch; and

combining a weight of dough for bakery products of the same dough type that cannot be produced in a full batch into a full batch.

A production run can be defined as bakery products that are produced in a plurality of batches.

10 A batch can be defined as a single weight of dough produced at one time for baking.

Preferably, the above method is completed using a computer program. More preferably, the computer program controls or works in conjunction with an automatic baking machine.

15 Preferably, each batch is displayed on a visual display unit. Each batch may be displayed graphically on the visual display unit. The bakery products produced in each batch may be identified graphically.

The sequence of batches in a production run may be varied to suit specific requirements.

20 The production time of each batch and/or the production run may be calculated.

Preferably, the number of the bakery products can be changed to obtain full batches for the production run.

### BRIEF DESCRIPTION OF THE DRAWINGS

An embodiment of the invention, by way of example only, will now be described with reference to the accompanying figures in which:

FIG. 1 is a table representing the type of bakery products to be produced.

FIG. 2 is a modified table of FIG. 1.

FIG. 3 is a graph representing a white dough production schedule for the table of FIG. 1.

FIG. 4 is a graph representing a white dough production schedule for the table of FIG. 2.

FIG. 5 is a graph representing a modified white dough production schedule of FIG. 4.

FIG. 6 is a graph representing a wholemeal dough production schedule for the table of FIG. 1.

FIG. 7 is a graph representing a wholemeal dough production schedule for the table of FIG. 2.

### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

In this embodiment of the invention, a computer program has been developed to schedule a production run of bakery products. The computer program is run in conjunction with an automatic baking machine such as the Genesis baking machine manufactured by Bakenomics of Narangba, Queensland, Australia.

To commence operation of the computer program, an operator

enters the bakery products that are to be baked. A list of bakery products to be produced is shown in FIG. 1. Normally, the bakery products are associated with individual codes, eg White Hi Top = WHT, but for ease of reference the full name of each of the bakery products has been included in the table.

The weight of each of the bakery products is then entered or obtained from a database. The weight of each bakery product is the weight of the dough that is required to produce the bakery product. The operator then enters the number of each of the bakery products that are desired.

The total weight of dough that is required to produce each of the desired number of each of the bakery products is calculated. The total weight is obtained using the following formula:

$$\text{Product Weight} \times \text{Number Required} = \text{Total Weight}$$

Using the Genesis machine, a batch is produced using a single bag of flour. A single bag of flour is used to mix 20 kg of dough. Once a flour bag has been open then the flour must be used within a short period of time or the flour must be discarded due to deterioration. It should be appreciated that batch sizes may be increased or decreased depending upon the capabilities of the machine and/or size of the flour bags.

The number of full batches that are needed to produce the number of each of the bakery products is then calculated by the following formula:

$$\text{Total Weight} / \text{Batch Size} = \text{No of Full Batches}$$

Depending on number of bakery products that are required, there is often remaining kilograms of bakery product that cannot be produced in a single batch. That is, there is left over bakery product. This remaining weight of bakery product must still be produced to obtain the desired number of product. This method allows the remaining product to be located at a start of a batch. The automatic baking machine allows a quick change of bakery product so that a batch can have any number of different products.

The computer program produces a graphical display on a visual display unit of the production schedule for each dough type as shown in FIG. 3 and FIG. 6. The schedules are produced for each dough type eg. white and wholemeal dough. A shading system is used to differentiate the different bakery products. A key may be produced to represent the different products.

Different production schedules are produced for different dough types. The same batches of dough type are run consecutively as the machine must be cleaned between different dough types being used. Dough types are determined by analysing the codes for each of the bakery products.

The production schedule visually displays if a batch is not a full batch. For example, FIG. 3 shows that there is a short fall of 2kg in batch 9 and FIG. 6 shows there is a over supply of 2kg in Batch 12.

An operator can then choose to reduce or increase the number



of bakery products to obtain a full batch. For example, after reviewing the production schedules of FIG. 3 and FIG. 6, an operator may increase the number of White Dinner Rolls from 240 to 260 and reduce the number of Wholemeal Rolls from 160 to 140 as shown in FIG. 2.

5                   A new production schedule is then visually displayed as shown in FIG. 4 and FIG. 7. An operator easily sees that the batches are all full from the production schedules.

                  An operator is also able to move batches to different positions on the production schedules to change the order of production as shown in  
10       FIG. 5.

                  This method allows for little to no wastage of dough. Further, an inexperienced operator can schedule a production run of dough.

                  It should be appreciated that various other changes and modifications may be made without departing from the spirit or scope of the  
15       invention.

DATED this Second day of April 2002.

BAKENOMICS PTY LTD

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By its Patent Attorneys

FISHER ADAMS KELLY

	Product weight (gms.)	Number Required	Total weight (kgs.)	Number of full batches (20kg)	Left over (kgs.)
White Hi Top	550	200	110	5	10
White Dinner Roll	50	240	12	0	12
White Lunch Roll	80	200	16	0	16
White Half Loaf	400	50	20	1	0
Wholemeal Loaf	800	150	96	4	16
Wholemeal Roll	100	160	16	0	16
Wholemeal Hi Top	550	200	110	5	10

FIG. 1

	Product weight (gms.)	Number Required	Total weight (kgs.)	Number of full batches (20kg)	Left over (kgs.)
White Hi Top	550	200	110	5	10
White Dinner Roll	50	280	14	0	14
White Lunch Roll	80	200	16	0	16
White Half Loaf	400	50	20	1	0
Wholemeal Loaf	800	150	96	4	16
Wholemeal Roll	100	140	14	0	14
Wholemeal Hi Top	550	200	110	5	10

FIG. 2

## White Dough Production Schedule

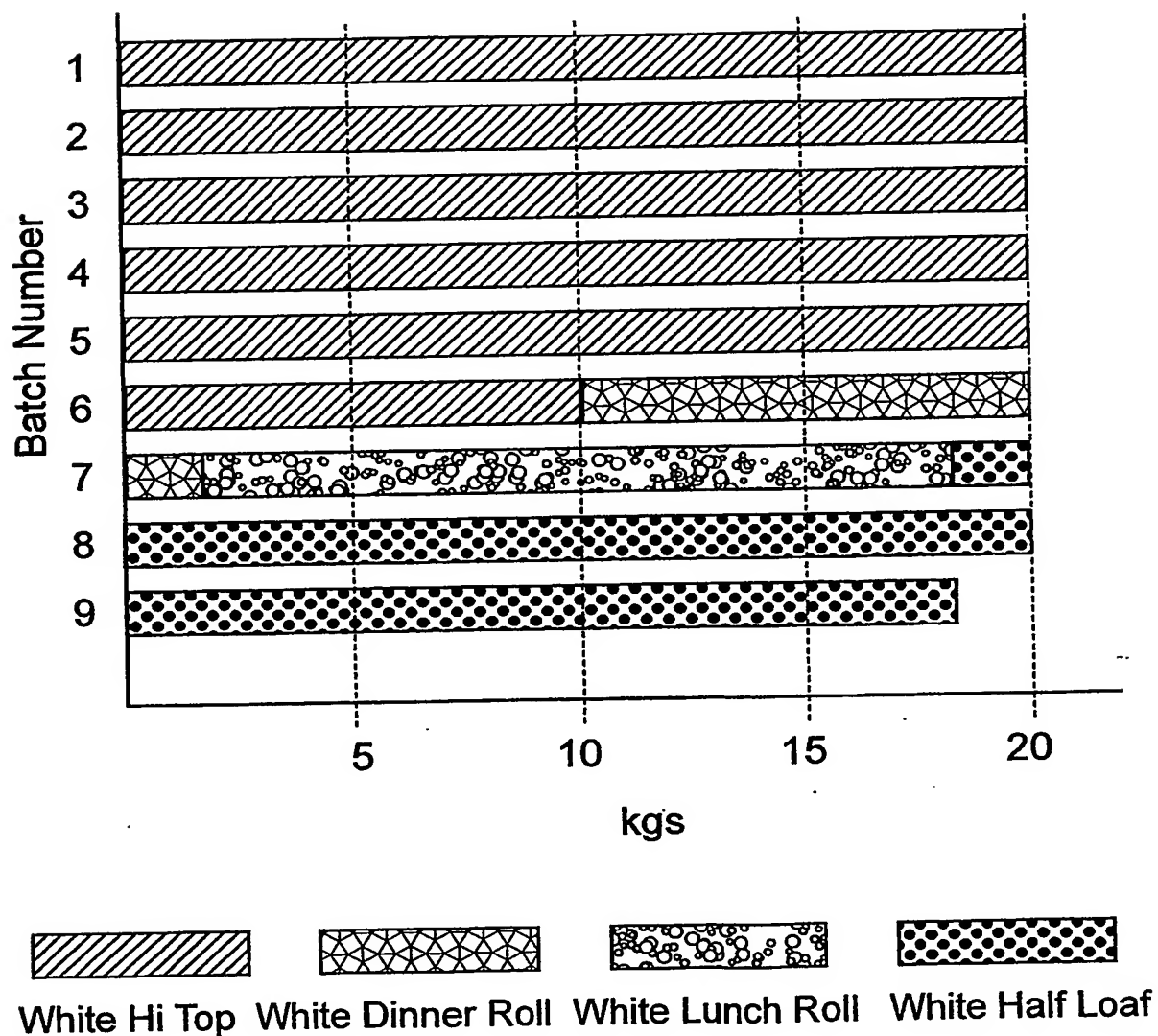


FIG. 3

## White Dough Production Schedule

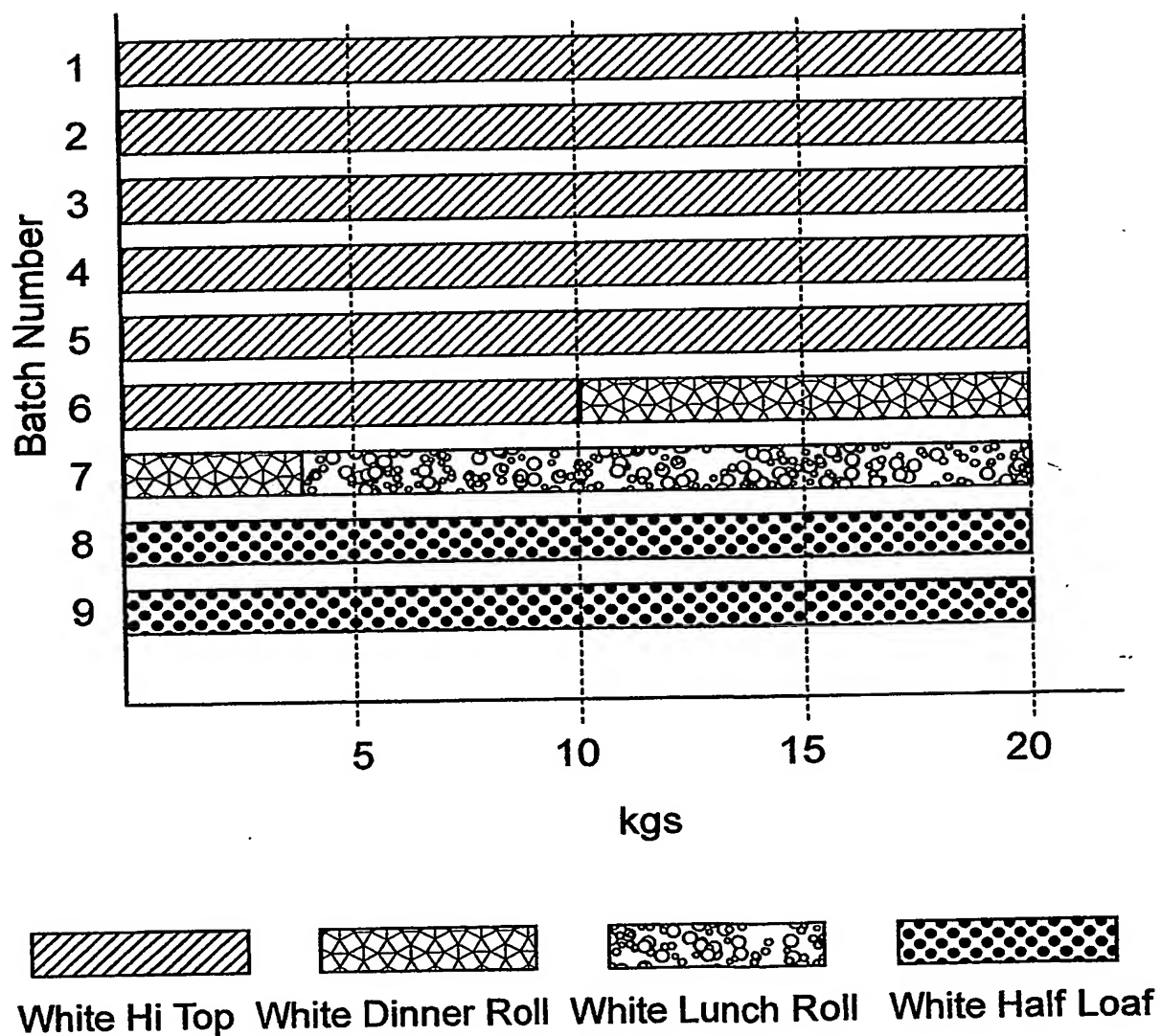


FIG. 4

# White Dough Production Schedule

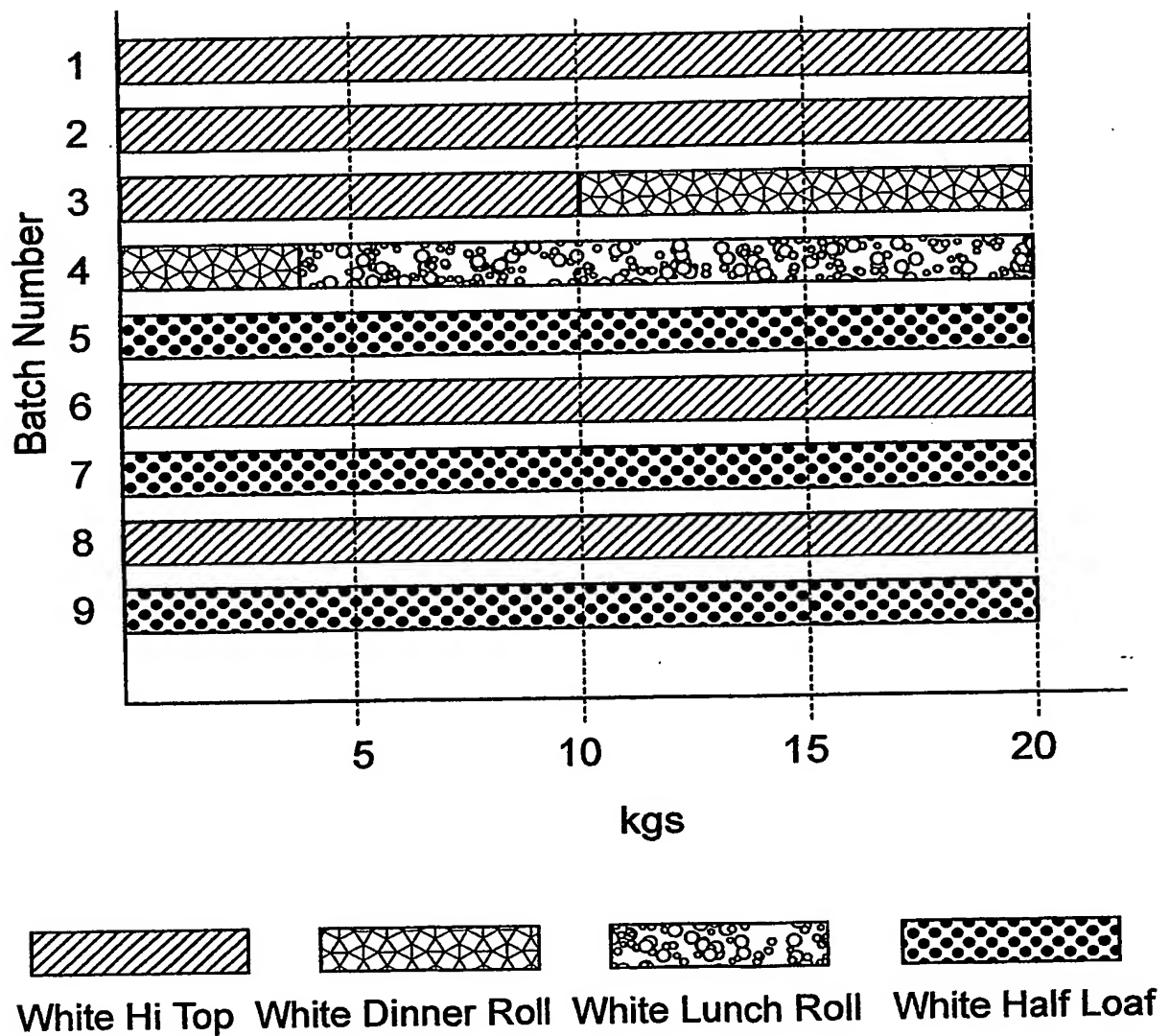
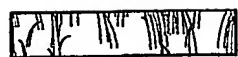
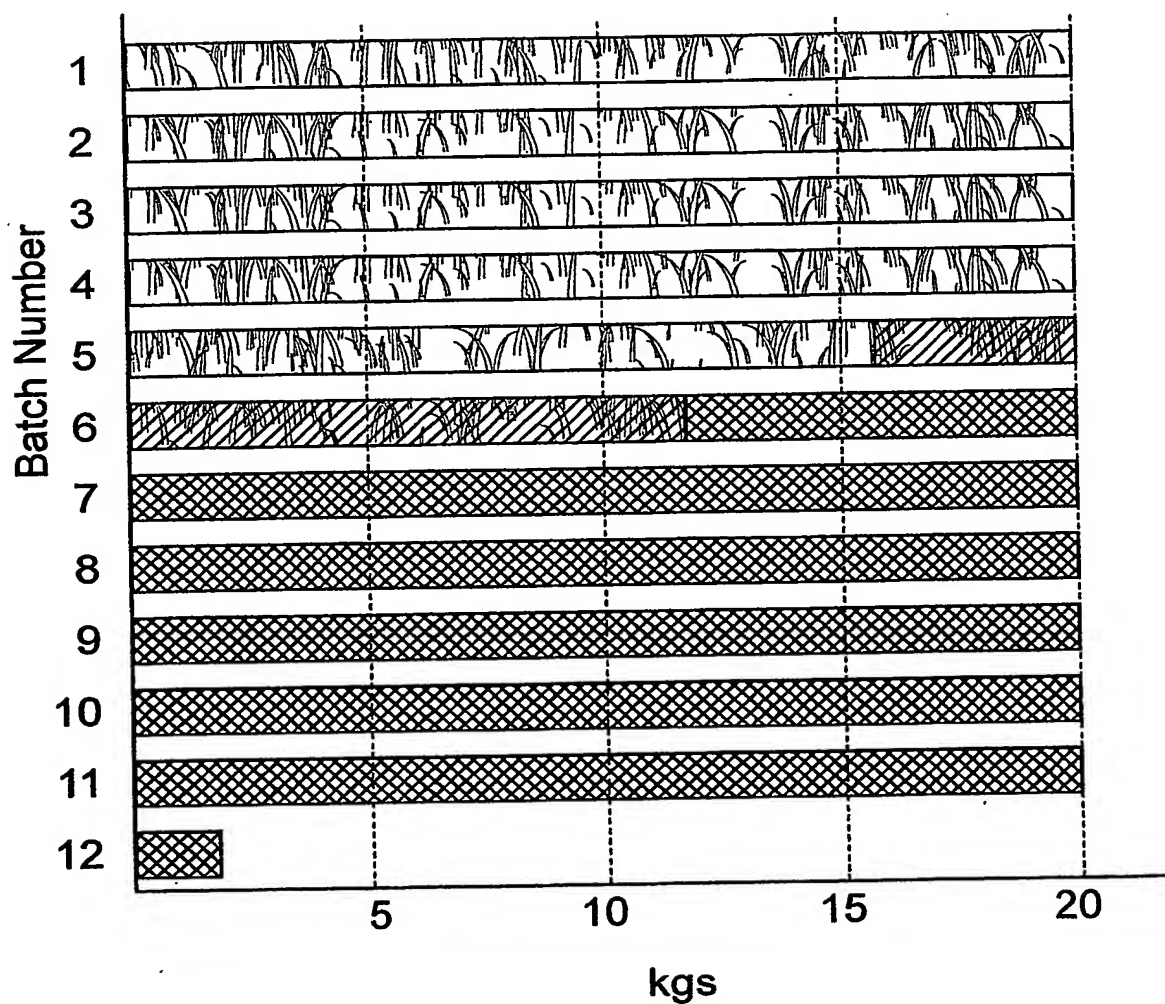


FIG. 5

# Wholemeal Dough Production Schedule



Wholemeal Loaf



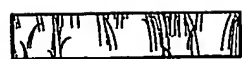
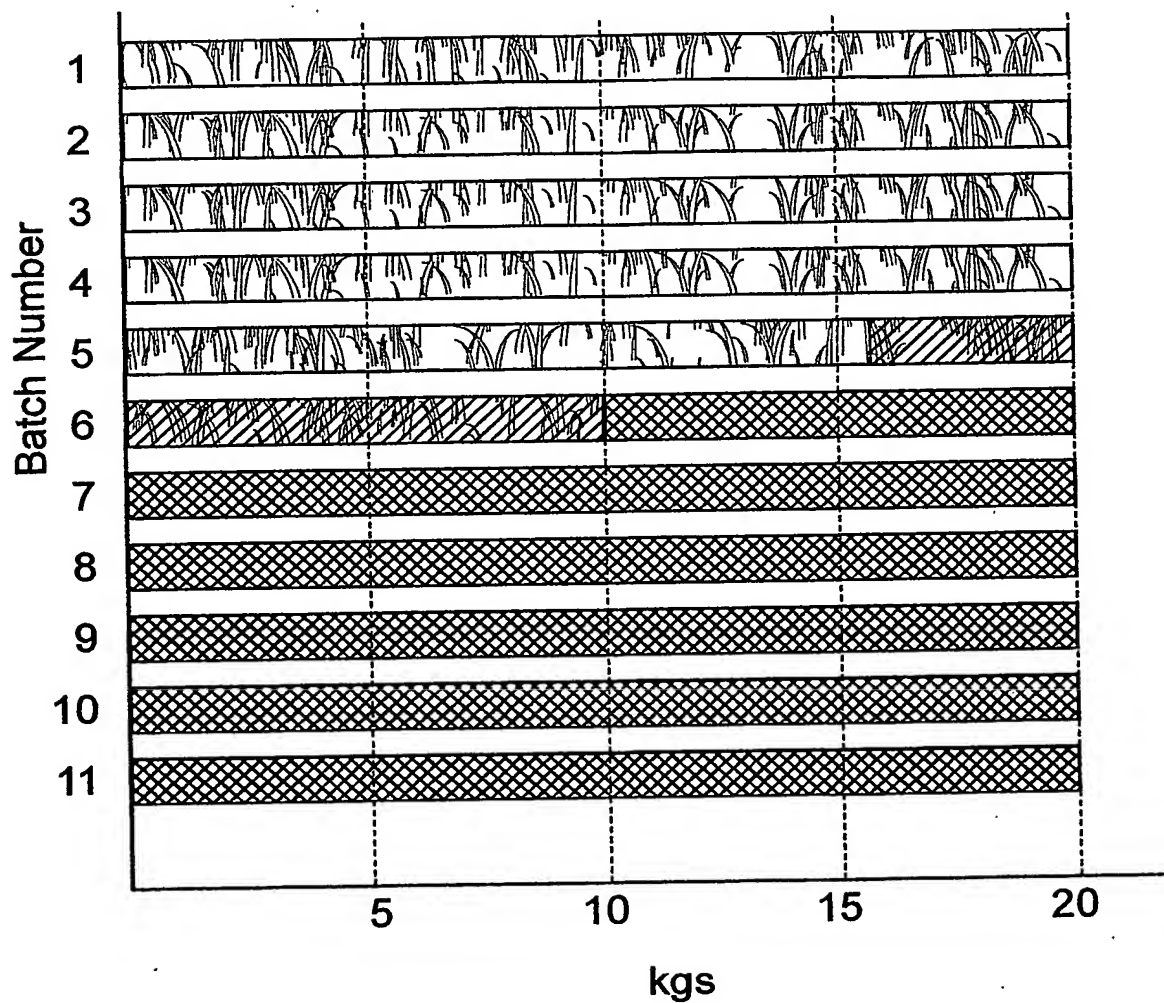
Wholemeal Roll



Wholemeal Hi Top

FIG. 6

# Wholemeal Dough Production Schedule



Wholemeal Loaf



Wholemeal Roll



Wholemeal Hi Top

FIG. 7